Before the
Federal Communications Commission
Washington D.C. 20554

In the Matter of Amendment of Section 73.622(i) of the Commission's Rules, DTV Table of Allotments (Flagstaff, Arizona)	MB Docket No. 08-110 RM No. 11453

To: Office of the Secretary, Federal Communications Commission
Attn: Chief, Media Bureau

SUPPLEMENT TO PETITION FOR RULEMAKING

Multimedia Holdings Corporation ("MHC"), the licensee of KNAZ-DT, Flagstaff, Arizona (Fac. ID No. 24749) ("KNAZ" or the "Station"), by its attorneys, hereby submits this supplement (the "Supplement") to its June 20, 2008 Petition for Rulemaking (the "Petition"),[1] which seeks to modify the DTV Table of Allotments (the "DTV Table") contained in Section 73.622(i) of the Commission's rules.[2] This Supplement, including the attached engineering statement of Richard Mertz (Exhibit A hereto), responds to a request from FCC staff for additional public interest information in support of the requested modification to the DTV Table.

[1] *In the Matter of Amendment of Section 73.622(i) of the Commission's Rules, DTV Table of Allotments (Flagstaff, Arizona)*, RM-11453, Petition for Rulemaking (June 20, 2008) ("Petition").

[2] *See* 47 C.F.R. § 73.622(i).

Background

As explained fully in the Petition, KNAZ is the only full-power network affiliate serving the small Flagstaff, Arizona market.[3] The Station operates as a satellite of KPNX(TV), Mesa, Arizona (Fac. ID No. 35486), a co-owned full-power television station in the Phoenix, Arizona market. The other major networks serve Flagstaff via low power television stations and TV translators.[4] Given the Station's unique and economically precarious situation, it is not surprising that KNAZ has been losing money for many years.[5] Nonetheless, MHC is committed to providing full-power digital service to the public after the digital transition. As set forth below, however, and as discussed in detail in the Petition, unanticipated events have forced the Station to change its strategy for providing such service.[6]

KNAZ-TV operates on analog channel 2 and was allotted channel 22 in the initial DTV Table of Allotments.[7] The Station currently is operating a channel 22 pre-transition digital facility.[8] As reflected in the DTV Table, MHC chose to return KNAZ to channel 2 for post-transition operations during the channel election process.[9] The

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[3] *See* Petition at 4.

[4] KNXV-TV, the ABC affiliate licensed to Phoenix, serves Flagstaff via TV translator station K52CM. KPHO-TV, the CBS affiliate licensed to Phoenix, serves Flagstaff via low power television station K50HU. KSAZ-TV, the FOX affiliate licensed to Phoenix, serves Flagstaff via TV translator station K48GI.

[5] *See* Petition at 4.

[6] *See id.* at 5-6.

[7] *See Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service*, 12 FCC Rcd. 14589, 14783 (1997); Petition at 1.

[8] *See* FCC File No. BLCDT-20070119AAN; Petition at 1.

[9] *See* 47 C.F.R. § 73.622(i); FCC File No. BFRECT-20050210AAB; Petition at 1.

election of channel 2 reflected the Station's intent to use its existing channel 2 antenna, along with a repurposed transmitter from a sister station in another market, for post-transition digital operations.[10] Unfortunately, unusually severe ice storms during the winter of 2007-2008 seriously damaged the Station's channel 2 antenna, rendering it unusable for post-transition digital operations.[11] Neither repair nor replacement of the channel 2 antenna is possible.[12] In light of these challenges, and in order to continue providing full-power service to the public after the transition, the Petition asked the Commission to allow KNAZ to serve Flagstaff post-transition using the Station's currently-licensed channel 22 digital facility.[13] Grant of the requested relief represents MHC's best hope of completing the Station's digital transition.

The Petition provided extensive support for the relief requested. For example, the Petition showed that KNAZ-TV can operate its currently-licensed channel 22 DTV facility post-transition consistent with the Commission's spacing and interference requirements and that the facility provides excellent market coverage comparable to the post-transition digital service of the other full-power stations licensed to Flagstaff.[14] The Petition also demonstrated that the requested relief would allow KNAZ to complete its digital transition early and provide new and innovative services such as Mobile DTV.[15]

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[10] *See id.* at 5.

[11] *See id.* Indeed, the Station's analog facility is currently operating pursuant to a reduced power STA because of damage to the channel 2 antenna. *See* FCC File No. BLSTA-20080513ACD.

[12] *See* Petition at 6.

[13] *See generally id.*

[14] *See id.* at 7.

[15] *See id.* at 8-10.

However, because the theoretical coverage footprint of the channel 22 facility is smaller than that of the channel 2 facility set forth in the DTV Table, FCC staff has asked MHC to provide additional public interest information in support of the relief requested in the Petition. Specifically, the Commission has asked for additional information about the services available to viewers located inside the Station's predicted analog Grade B contour who may not receive over-the-air service from the licensed channel 22 DTV facility post-transition.

This Supplement responds to the Commission's request. As an initial and critically important matter, this Supplement shows that surrounding terrain[16] significantly impacts the actual over-the-air coverage of the Station's current channel 2 analog facility, the Station's current channel 22 digital facility, and, indeed, the coverage of *any* over-the-air television station attempting to serve the Flagstaff, Arizona area.[17] The nature of the terrain presents two realities that must be recognized. *First*, much of the area within the Station's predicted analog Grade B contour – including several population centers – currently *does not receive* over-the-air service from the Station. This fact makes it not surprising that approximately 9 out of 10 viewers in the Flagstaff area today rely on

[16] The topographical map at Exhibit A, Figure 1 graphically demonstrates the terrain challenges of the Flagstaff area, between Maricopa County to the south and the Grand Canyon to the north. Note in particular the rugged terrain northeast of Prescott and north of Black Canyon City, which blocks much of the former community and all of the latter community from Flagstaff. Payson is likewise significantly terrain-blocked to the north and west from Flagstaff.

[17] *See* Exhibit A, Figure 2 (showing Longley-Rice coverage of KNAZ's analog facility); *id.*, Figure 3 (showing line of sight coverage of same facility); Exhibit A, Figure 6 (showing Longley-Rice coverage of KNAZ's channel 22 DTV facility); *id.*, Figure 7 (showing interference free coverage of KNAZ's analog and channel 22 DTV facilities); *id.*, Figure 9 (showing Longley-Rice coverage of KCFG-DT, Flagstaff, AZ); *id.*, Figure 10 (showing Longley-Rice coverage of KFPH-DT, Flagstaff, AZ); *id.*, Figure 11 (showing Longley-Rice coverage of KDTP-DT, Holbrook, AZ); *id.*, Figure 12 (showing Longley-Rice coverage of KAZT-DT, Prescott, AZ).

satellite or cable to receive local broadcast stations. *Second*, the currently-licensed channel 22 digital facility for KNAZ provides viewable over-the-air service *well beyond* that facility's predicted service (*i.e.*, the 41 dBu) contour. Taking into account these realities, this Supplement demonstrates that only a *de minimis* number of persons risks loss of service as a result of the facility changes proposed in the Petition. Given the unanticipated events that have made buildout of a channel 2 DTV facility impossible and the *de minimis* loss in population coverage that would result from continued operation of the licensed channel 22 DTV facility post-transition, the public interest more than supports grant of the relief requested in the Petition.

The Terrain in the Flagstaff Area Severely Limits Over-The Air Coverage and Requires Many People to Receive Local TV Stations Via Alternate Sources

Under the FCC's standard predictive methodology, KNAZ's channel 2 analog facility would be expected to provide over-the-air coverage to a large, essentially circular area surrounding Flagstaff.[18] As shown in the attached maps, however, the coverage reality is quite different. Because of extensive terrain blockage, many areas within the KNAZ channel 2 analog Grade B contour, including several substantial population centers, do not currently receive a viewable over-the-air signal from the Station.[19] Accordingly, for at least 30 years and 15 years, respectively, MHC has operated TV translator K06AE at Prescott, Arizona and low power television station KPSN-LP at Payson, Arizona, because intervening terrain obstructions prevent reception of a quality

[18] *See* Exhibit A, Figure 2 (showing Longley-Rice coverage of KNAZ's analog facility, as well as the Station's Grade B contour).

[19] *See id.* The real-world coverage problems are a direct result of the lack of line of sight from the Station's transmitter site to much of the Flagstaff area, as shown in Exhibit A, Figure 3. As would be expected, the interference-free coverage of the station is also limited by local terrain. *See id.*, Figure 7.

over-the-air signal from KNAZ in large portions of both communities.[20] Other smaller population centers such as Black Canyon City cannot view KNAZ over-the-air at all.[21] In light of the foregoing, it is not surprising that, in the five counties that comprise the KNAZ service area – Coconino, Gila, Maricopa, Navajo, and Yavapai – an average of almost 90 percent of the population relies on cable or satellite to view local television stations.[22] For example, in Yavapai County, where Black Canyon City is located, the cable/satellite penetration level is 90.1 percent.[23]

KNAZ's Currently-Licensed Channel 22 DTV Facility Provides Over-the-Air Coverage to Areas Well Beyond That Facility's Predicted Service Contour

Of course, the over-the-air coverage provided by KNAZ's currently-licensed Channel 22 digital facility also is affected by surrounding terrain.[24] It must be recognized, however, that in many directions, the facility provides reliable over-the-air service well beyond the channel 22 predicted 41.0 dBu service contour.[25] KNAZ-DT currently provides 41.0 dBu service out to at least the analog Grade B contour, and beyond, to the north, east and southeast of Flagstaff, in an arc from approximately 10

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[20] *See id.*, Figures 4, 5 (graphically depicting terrain obstacles between the Station's transmitter site and the communities of Prescott and Payson); *id.*, Figures 2, 3, 7 (showing 60 dBu contours of K06E and KPSN-LP).

[21] *See id.*, Figures 2, 3, 7.

[22] *See id.*, Figure 8, Tables I and II.

[23] *See id.*

[24] *See id.*, Figure 6 (showing Longley-Rice coverage of Station's channel 22 DTV facility).

[25] *See id. See also id.*, Figure 7 (showing interference-free coverage of Station's channel 22 DTV facility).

degrees to 135 degrees True.[26] Similarly, KNAZ-DT currently provides 41.0 dBu service out to at least the analog Grade B contour, and beyond, to areas to the west of Flagstaff.[27] In short, what these materials show is that, in fact, many *analog* viewers within the Grade B contour *do not*, because of terrain, receive over-the-air service, while many *digital* viewers within the Grade B contour, but beyond the predicted digital service contour, *do* receive over-the-air service.

Only a* De Minimis *Number of Persons Would Risk Possible Loss of Service Due to the Proposed Facilities Change

Finally, any assessment of the impact of the facilities change proposed in the Petition must account for the relevant realities of the Flagstaff area – where (1) many people within the analog Grade B contour do not, in fact, receive Grade B service over the air; (2) many people who are not within the predicted service contour of the currently-licensed channel 22 DTV operation do, in fact, receive over-the-air DTV service; and (3) terrain challenges throughout the area force the population to rely extensively on cable and satellite to view local television stations. As set forth below, an analysis that takes these factors into account shows that the predicted "loss" that would result from operating the current channel 22 DTV facility after the transition (*i.e.*, the number of people who receive over-the-air analog service from the Station's current channel 2 facility but will not receive over-the-air digital service from the Station's channel 22

[26] *See id.*, Figure 6.

[27] *See id.*

facility after the transition) is only 7,030 persons, or 2.6 percent of the population currently receiving over-the-air analog service from the Station.[28]

Specifically, an analysis under the FCC's TV Process methodology shows that, within the predicted analog Grade B contour of KNAZ, 274,374 people receive an interference-free, over-the-air analog signal from the Station's channel 2 analog facility. Under the same methodology, 194,040 people within the predicted analog Grade B contour receive an interference-free, over-the-air signal from the Station's currently-licensed digital facility. Accordingly, 80,334 (*i.e.*, 274,374 - 194,040) people potentially will lose over-the-air service after the transition. High reliance on satellite and cable in the Flagstaff area mitigates this coverage loss significantly, however. In fact, after correcting for cable and satellite penetration, only 7,030 persons would actually risk losing coverage after the transition. 7,030 represents a mere 2.6 percent of the people who currently receive over-the-air service from the Station's channel 2 analog facility.[29] Accordingly, in the real world, operation of KNAZ's licensed channel 22 digital facility after the transition would result in a loss of over-the-air service to no more than a *de minimis* number of people, some of whom, it may be assumed, will receive over-the-air service from K06AE and KPSN-LP in Prescott and Payson, respectively.[30]

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[28] The steps of the relevant calculations are set forth briefly below and, in more detail, in Exhibit A, Figure 8, Table I.

[29] The predicted Grade B contour of the Station's channel 2 analog facility is very similar to the predicted service contour of the channel 2 facilities provided for the Station in the DTV Table. Accordingly, an analysis delimited by the predicted service contour of Station's channel 2 DTV Table facility (the so-called "Appendix B" facility) yields virtually identical results. *See id.*, Figure 8, Table II.

[30] The terrain limits other over-the-air service to the area as well. The only other NBC network service to the loss areas is from KPNX(TV), Mesa, Arizona (Fac. ID No. 35486) – a co-owned full-power television station in the Phoenix market, of which KNAZ is a satellite. KPNX serves some small areas in the southwest quadrant of the KNAZ analog

Conclusion

KNAZ is the Flagstaff market's lone full-power major network affiliate. The Station initially intended to serve Flagstaff after the transition using the channel 2 facility specified in the DTV Table. Unanticipated events have all but destroyed the Station's channel 2 antenna, however, rendering construction of the Station's DTV Table facility impossible. Thankfully, KNAZ can operate its currently-licensed channel 22 DTV facility after the transition in full compliance with the Commission's technical requirements. Moreover, the only coverage limitations affecting the station's currently-licensed channel 22 digital facility are those that apply equally to *any* TV broadcast station attempting to serve the rugged terrain around Flagstaff. As shown in this Supplement, KNAZ will provide full-power post-transition channel 22 DTV service to the public with only a *de minimis* loss in coverage.[31] MHC submits that the Commission

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Grade B contour. *See id.*, Figure 13 (showing Longley-Rice coverage of KPNX's current digital construction permit application). Other Phoenix stations, all of which are co-located with KPNX at the South Mountain telecommunications site in Phoenix, likewise do not provide service to any significant degree to the Flagstaff area. Appendix A, Figure 14 shows the contour of KAET-DT which, out of all of the co-located Phoenix television station, provides the best over-the-air service to the Flagstaff area. As shown in Figure 14, KAET serves only very limited areas within the southwest portion of the KNAZ Grade B contour. The other full-power stations licensed to Flagstaff, KCFG and KPFH, have coverage footprints similar to that of KNAZ – essentially providing, or failing to provide, over-the-air service to the same areas within the KNAZ Grade B contour. *Compare id.*, Figures 9 and 10 (showing Longley-Rice coverage of KCFG-DT and KFPH-DT, respectively) *with id.,* Figure 6 (showing Longley-Rice coverage of KNAZ's channel 22 DTV facility). Station KDTP-DT in Holbrook serves the area to the east of Flagstaff which is also served over-the-air by KNAZ, KCFG and KFPH. *Compare id.*, Figure 11 (showing Longley-Rice coverage of KDTP-DT) *with id.*, Figures 6, 9 and 10. Station KAZT-DT in Prescott serves areas to the southwest that receive little or no other over the air service. *Compare id.*, Figure 12 (showing Longley-Rice coverage of KAZT-TV) *with id.*, Figures 6, 9, 10, 13 and 14. The mountainous terrain and the economic realities of the market result in limited numbers of stations serving most of the area, as reflected in the high cable and satellite penetration levels.

[31] The other major networks are serving a limited number of discrete, smaller communities within the market, like Prescott and Cottonwood, using translators. But no other top-4 network will blanket the area with a primary signal like KNAZ will, serving

should grant the Petition, thereby serving the public interest and preserving the sole full-power, major network affiliate serving the Flagstaff market.

Respectfully Submitted,

MULTIMEDIA HOLDINGS CORPORATION

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Dated: September 22 2008

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all or parts of many communities, such as Leupp, Munds Park, Clarkdale, Sedona, Big Park, Camp Verde, Paulden, Chino Valley, Mayer, Spring Valley, Williamson, Winslow, Dilkon, and Heber-Overgaard. *See id.*, Figure 6.

EXHIBIT A – ENGINEERING STATEMENT OF RICHARD MERTZ

Engineering Statement

PREDICTION OF COVERAGE

prepared for

Multimedia Holdings Corporation

KNAZ-TV Flagstaff, Arizona

Facility ID 24749

Ch. 22 283 kW (MAX-DA) 465 m

Multimedia Holdings Corporation ("Multimedia") is the licensee of analog television station KNAZ-TV, Channel 2, Flagstaff, AZ and its companion pre-transition digital station KNAZ-DT, Channel 22. As previously reported, circumstances at the existing KNAZ transmitter site have necessitated a change in the station's post-transition digital channel and a modification of the final facility's operating parameters (see BPRM-20080620AOL). When the Commission's standard predication methods as prescribed in OET Bulletin No. 69 ("OET 69") are employed to evaluate the proposed channel change, a loss of over-the-air coverage is predicted (when interference-free population figures are compared). However, as shown below, the Commission's standard method is erroneous when the coverage area involves a mountainous region. Accordingly, this engineering statement has been prepared to provide further data as requested by Commission Staff, and to demonstrate that a predication of a substantial loss of coverage using the Commission's standard propagation method is overstated in this instance, and since television signals in this mountainous area of the county are routinely delivered via alternate methods.

The Commission's OET 69 methodology employs the established Longley-Rice propagation method to determine the signal levels for desired and undesired stations at locations within a defined study area. The bounds of the study area are defined by the either the analog Grade B contour or the station's digital service contour. Even if interference-free coverage exists past the defined coverage contour, it is not counted. For unique cases such as the one at hand, this methodology may not be appropriate.

Specifically, KNAZ operates in a mountainous area of the country. As such, limiting the OET 69 study area to just the service contour understates the number of persons who receive off-the-air service. Thus, a comparison of the proposed KNAZ Channel 22 UHF post-transition digital facility to the Channel 2 analog facility or the Channel 2 Appendix B facility could be misleading when describing realized actual coverage. Because of the mountainous terrain in the Flagstaff area, many viewers employ methods other than over-the-air viewing as evidenced by data reported by the Nielsen Company. This data shows a high percentage of viewers employ

either cable or satellite viewing instead of over-the-air reception[1]. Since many viewers receive *KNAZ's programming via methods other than off-the-air, these same viewers will continue to* receive service after the analog shutdown in February 2008.

This office prepared a series of supporting exhibits:

Figure 1	Topographic Features in the Flagstaff Area
Figure 2	Predicted Analog Terrain-Limited Coverage within Analog Grade B FCC Contour
Figure 3	Predicted Line of Sight Coverage within the Licensed Analog Grade B FCC Contour
Figure 4	Line of Sight from KNAZ to Prescott, Arizona
Figure 5	Line of Sight from KNAZ to Payson, Arizona
Figure 6	KNAZ-DT Predicted Terrain Limited Coverage within Analog Grade B FCC Contour
Figure 7	Predicted Digital and Analog Interference-free Coverage within Licensed Analog Grade B FCC Contour
Figure 8	Table I and Table II – Calculation of Potential Service Loss
Figure 9	Predicted Terrain-Limited Coverage – KCFG-DT
Figure 10	Predicted Terrain-Limited Coverage – KFPH-TV
Figure 11	Predicted Terrain-Limited Coverage – KDTP(TV)
Figure 12	Predicted Terrain-Limited Coverage – KAZT-TV
Figure 13	Predicted Terrain-Limited Coverage – KPNX(TV)
Figure 14	Predicted Terrain-Limited Coverage – KAET(TV)

Figure 1 depicts the topographic features[2] in the Flagstaff area. **Figures 2, 6,** and **9** through **14** were prepared using the standard Longley-Rice propagation method. The "time variability" was adjusted to 50% for analog stations and 90% for digital stations. **Figures 2** and **6** document the terrain-limited analog and digital coverage of the subject facility. **Figures 9** through **14** depict the terrain-limited coverage of other area stations within the KNAZ analog Grade B contour.

The area of service depicted in **Figure 7** was determined by plotting the graphical output of the "tv_process" computer program. A Longley-Rice cell size of 2 km² was employed and the study area bounds were enlarged past the Grade B contour to determine those areas outside the digital service contour where coverage exists. Blocks where no analog coverage is produced or blocks where interference to the analog facility was identified, are tinted in blue. Areas of no

[1] It should be noted that co-owned KPNX(TV), Mesa, AZ, operates a low power TV station, KPSN-LP, Payson, AZ and TV translator station, K06AE, Prescott, AZ. Both are located within the KNAZ-TV analog Grade B coverage contour, and deliver NBC programming to areas of poor or non-existent over-the-air reception from the main station. KPNX operates at the Phoenix antenna farm. As shown in **Figures 13** and **14**, coverage from Phoenix stations within the KNAZ analog Grade B contour is limited.

[2] The topographic data was retrieved from the U.S. Government's National Atlas web site.

service or blocks where interference was identified to the proposed KNAZ Channel 22 facility, are tinted in green.

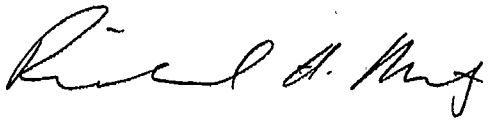
The data presented in the **Figure 8 – Table I** and **Table 2** was derived using the graphical output from the "tv_process" computer program. Those areas where the computer program predicted either "no service" or "interference received" were independently plotted for the analog facility, the Appendix B facility, and the proposed facility. Areas outside the analog Grade B contour were not considered. Thus, population within the Grade B and each of the five area counties was determined. Next, areas where "no coverage" or "interference" was predicted within the Grade B contour were then plotted and the population within these bounds determined. The resulting prediction of "no service" was subtracted from the county population (within the Grade B contour) and the Cable/ADS penetration percentages were applied. The population employing Cable/ADS was then subtracted from the no service population on a county by county basis. The result is the predicted population that will lose service as a result of the Multimedia's proposal.

Conclusion

As demonstrated by the attached figures, the area surrounding Flagstaff and the area within the predicted analog Grade B contour are located in a mountainous area of the country where direct over-the-air reception is not possible in many areas. By adjusting the Commission's tv_process computer program to study areas outside the predicted service contour, coverage outside the contour is predicted. Applying Cable/ADS penetration percentages to the "loss" population shows that actual lost service is minimal. Towns identified by Commission Staff as losing service have actually never received over-the-air service.

Certification

The undersigned hereby certifies that the foregoing statement was prepared by him or under his direction, and that it is true and correct to the best of his knowledge and belief. Mr. Mertz is a principal in the firm of *Cavell, Mertz & Associates, Inc.*, holds a Bachelor of Science degree from Oglethorpe University, and has submitted numerous engineering exhibits to the Federal Communications Commission. His qualifications are a matter of record with that agency.



Richard H. Mertz
September 22, 2008

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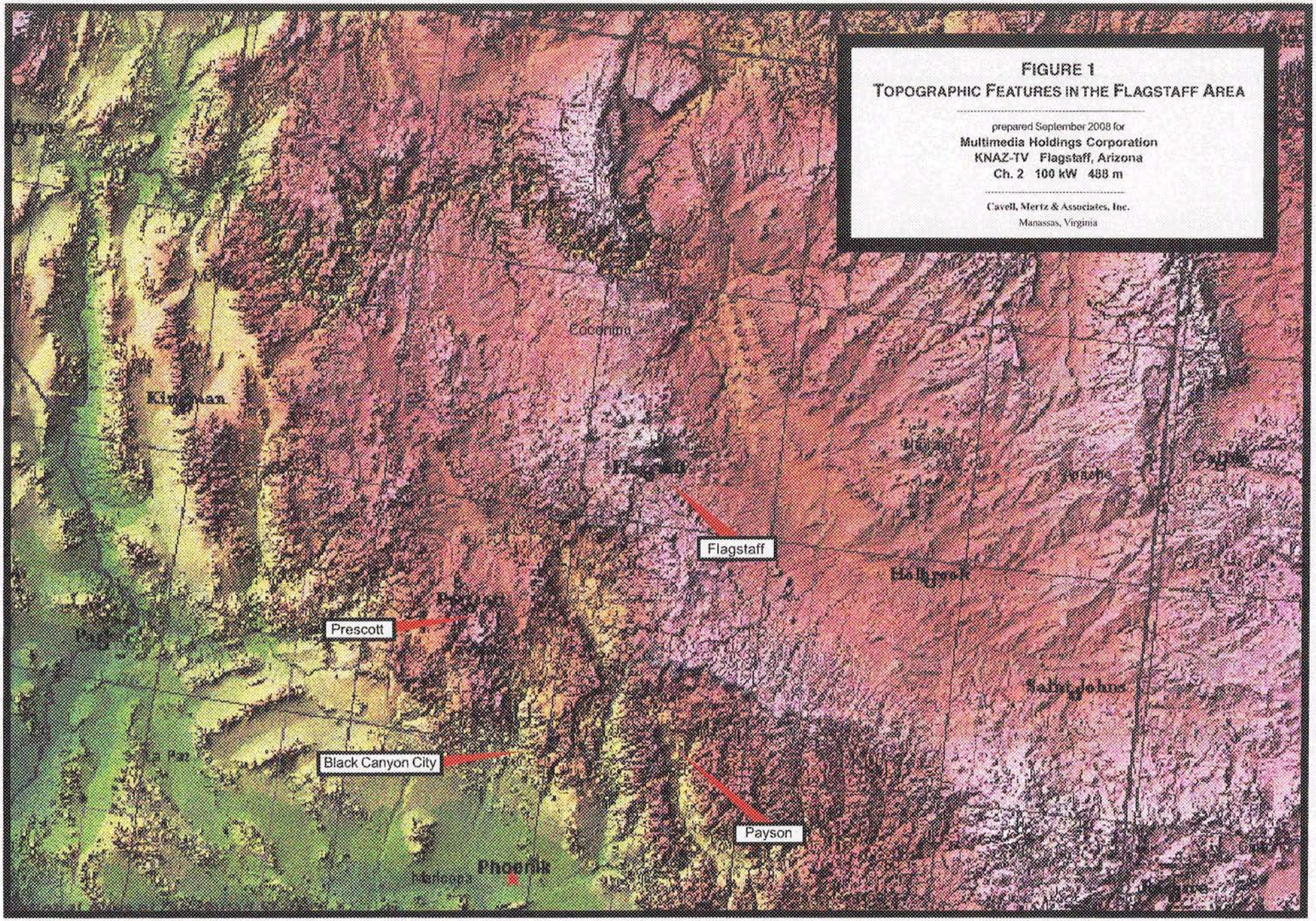


FIGURE 1
TOPOGRAPHIC FEATURES IN THE FLAGSTAFF AREA
prepared September 2008 for
Multimedia Holdings Corporation
KNAZ-TV Flagstaff, Arizona
Ch. 2 100 kW 488 m
Cavell, Mertz & Associates, Inc.
Manassas, Virginia
Coconino
Flagstaff
Prescott
Black Canyon City
Payson
Phoenix

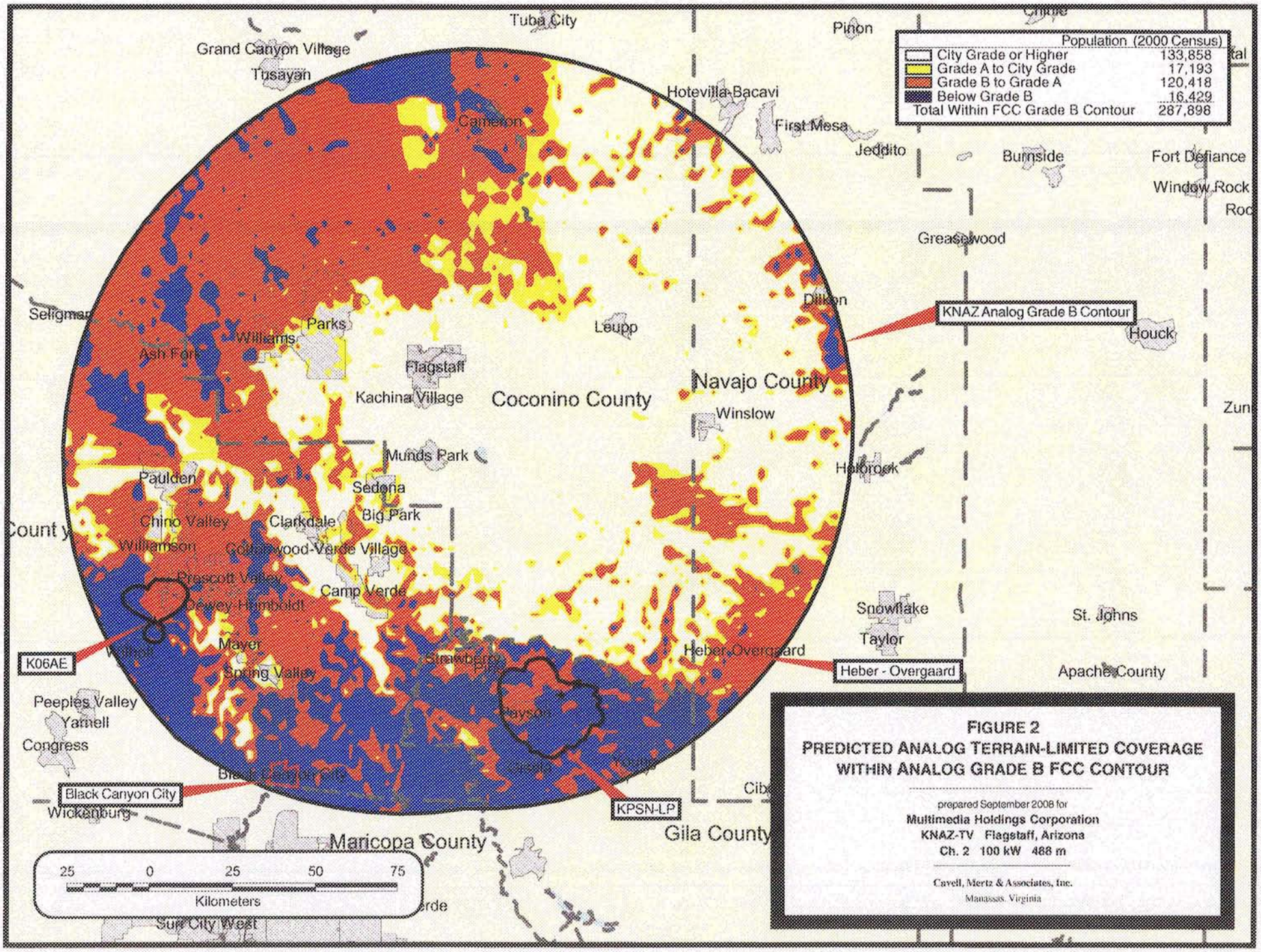


FIGURE 2
PREDICTED ANALOG TERRAIN-LIMITED COVERAGE WITHIN ANALOG GRADE B FCC CONTOUR

prepared September 2008 for
Multimedia Holdings Corporation
KNAZ-TV Flagstaff, Arizona
Ch. 2 100 kW 488 m

Cavell, Mertz & Associates, Inc.
Manassas, Virginia

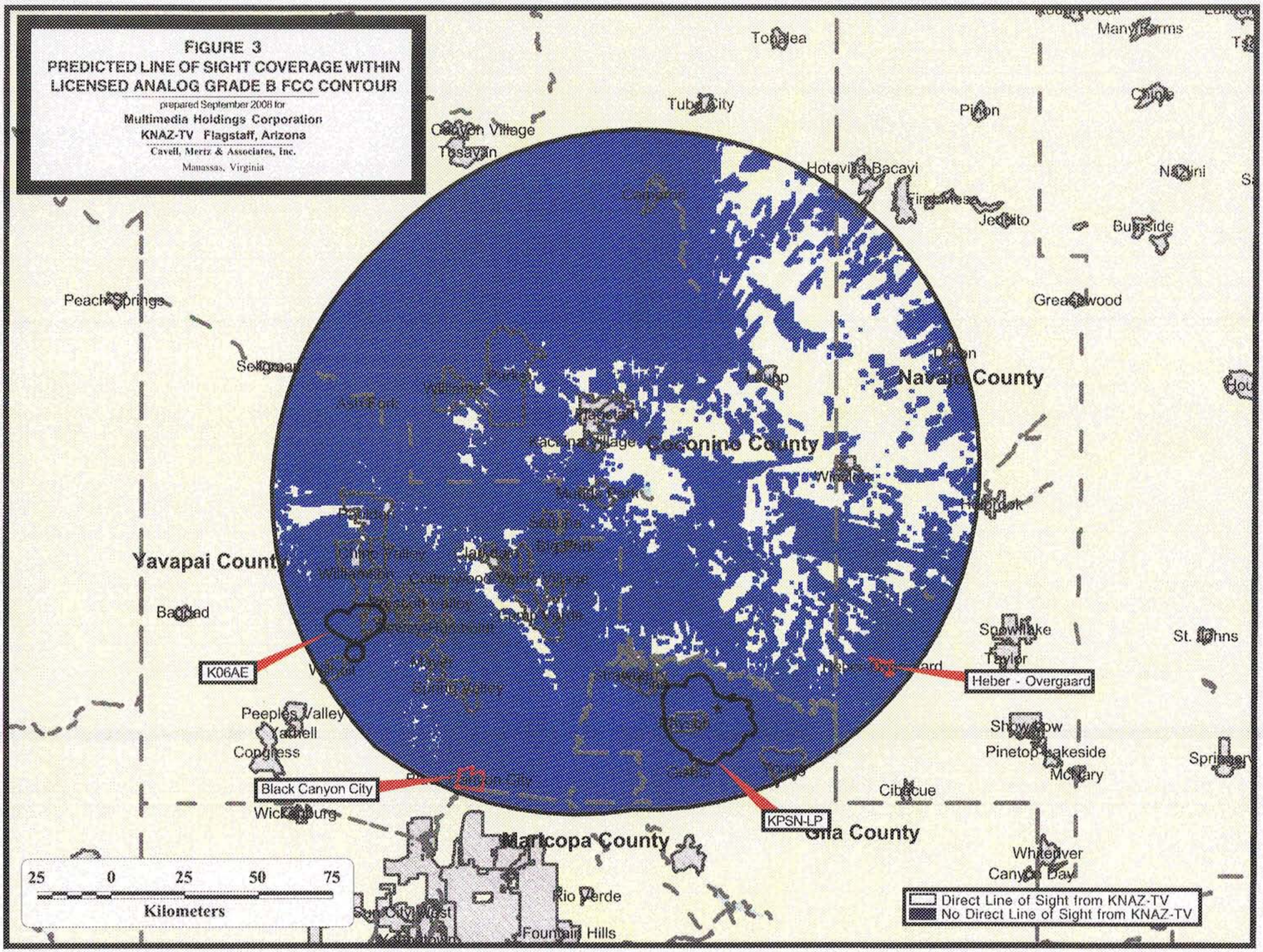
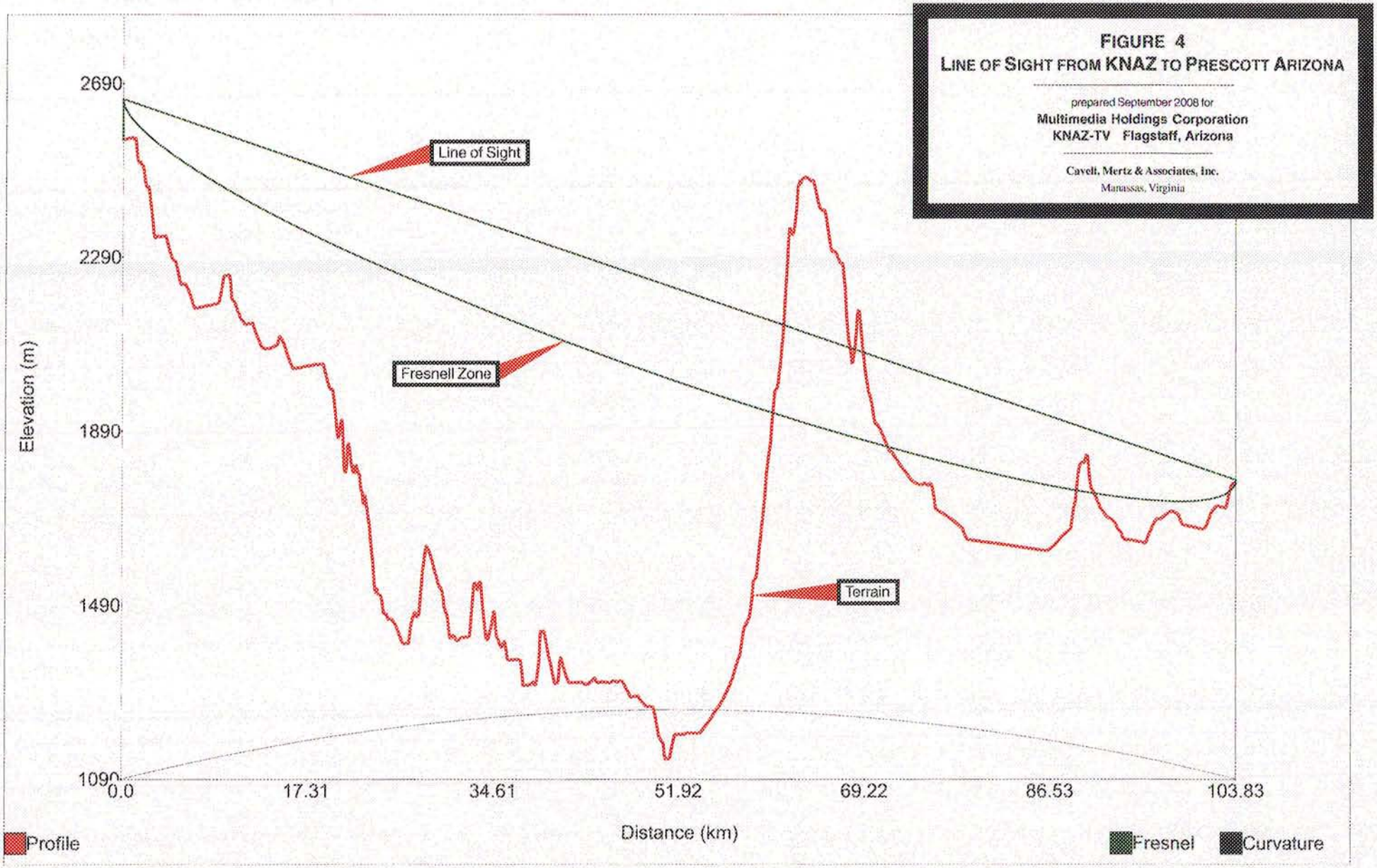


FIGURE 3
PREDICTED LINE OF SIGHT COVERAGE WITHIN LICENSED ANALOG GRADE B FCC CONTOUR
prepared September 2008 for
Multimedia Holdings Corporation
KNAZ-TV Flagstaff, Arizona
Cavell, Mertz & Associates, Inc.
Manassas, Virginia

FIGURE 4
LINE OF SIGHT FROM KNAZ TO PRESCOTT ARIZONA

prepared September 2008 for
Multimedia Holdings Corporation
KNAZ-TV Flagstaff, Arizona

Cavell, Mertz & Associates, inc.
Manassas, Virginia



Starting Latitude: 34-58-06 N
Starting Longitude: 111-30-28 W

End Latitude: 34-32-18.27 N
End Longitude: 112-30-54.42 W

Distance: 103.83 km
Bearing: 242.95 deg

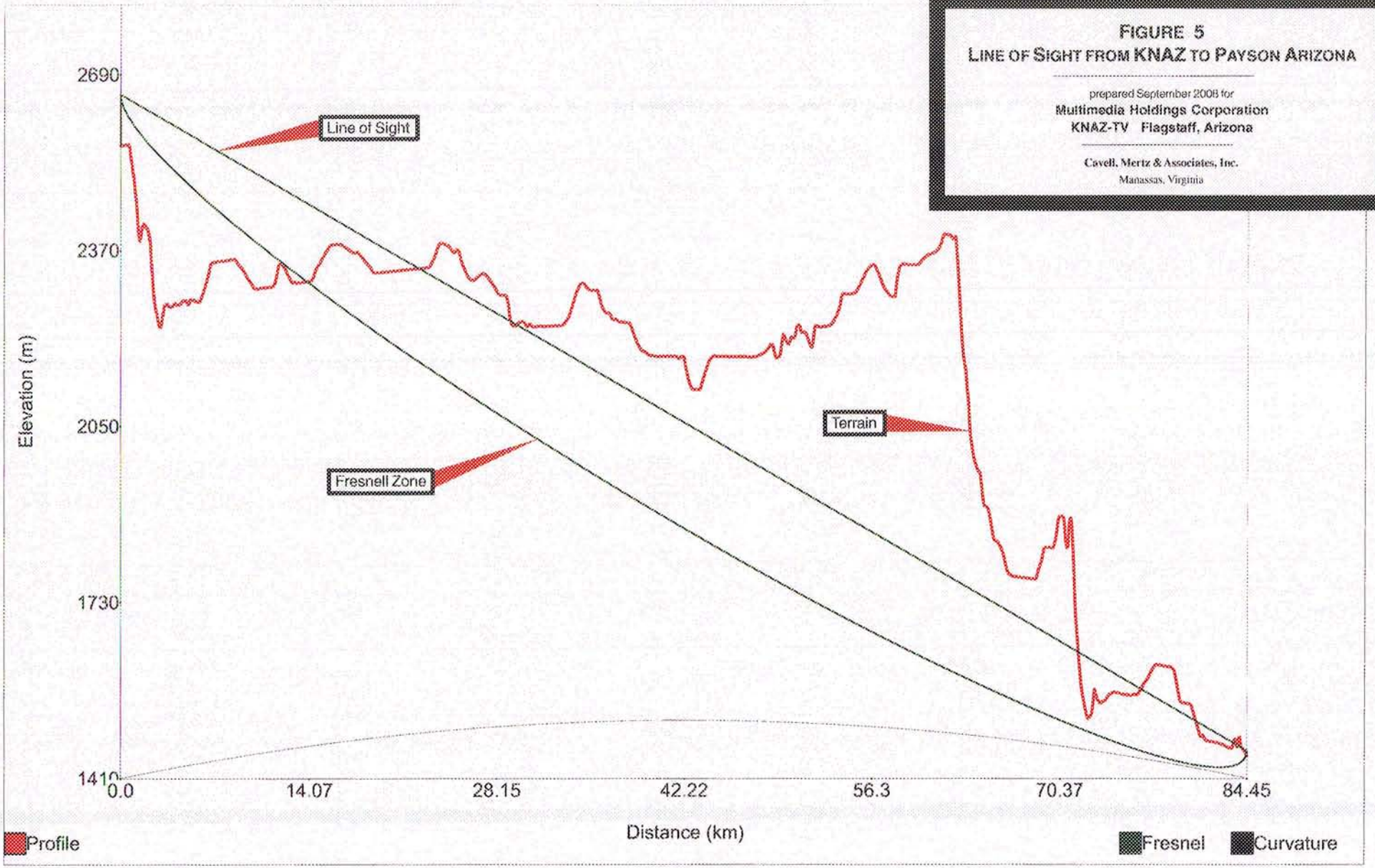
Transmitter Elevation = 2560.0 m
Receiver Elevation = 1768.1 m

Frequency = 57.0 MHz
Fresnel Zone: 0.6

FIGURE 5
LINE OF SIGHT FROM KNAZ TO PAYSON ARIZONA

prepared September 2008 for
Multimedia Holdings Corporation
KNAZ-TV Flagstaff, Arizona

Cavell, Mertz & Associates, Inc.
Manassas, Virginia



Starting Latitude: 34-58-06 N
Starting Longitude: 111-30-28 W

End Latitude: 34-14-04.74 N
End Longitude: 111-15-44.08 W

Distance: 84.45 km
Bearing: 164.46 deg

Transmitter Elevation = 2560.0 m
Receiver Elevation = 1449.9 m

Frequency = 57.0 MHz
Fresnel Zone: 0.6